THE VETERINARY RECORD

A Weekly Journal for the Profession.

EDITED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1263. SEPTEMBER 21, 1912. VOL. XXV.

THE MICROSCOPE IN PRACTICE.

Despite its supreme importance in accurate diagnosis, the microscope is comparatively little used in everyday veterinary practice. In some practices—a diminishing number—it is never used at all. In the great majority, probably, its use is confined to such simple work as the diagnosis of anthrax and the various acariases; and, even in the case of the latter, there are still very many practitioners who usually rely upon clinical examination alone to determine the existence of mange.

There are many reasons why a working clinician should use the microscope comparatively little for actual diagnosis, and not at all for general study. Perhaps the main one is his own recognition of the difficulties of performing any but simple microscopic work in practice, as compared with the facilities of the man in the laboratory. These difficulties must be admitted—the serious study of bacteriology, for instance, including most exact bacteriological diagnoses, requires so much more than an ordinary microscopic examination that it is inaccessible to almost every clinician. But, making all allowance for the limitations imposed by practice, we think that the misroscope might be more used in the profession than it is.

Many men take up what are known as hobbies, and a veterinary practitioner might choose many a worse one than the microscope in connection with his own work. An average practice will yield a fair amount of varied material, and much of it can be worked upon without more technical knowledge and apparatus than most practitioners possess. The bulk of parasitological work can be done with an ordinary microscope and a few inexpensive chemicals and accessories. Very little more, beyond the addition of a simple microtome, would enable a good deal of normal and pathological histology to be included. Either of these two subjects—or rather collections of subjects—would be enough to occupy the practitioner's leisure without soaring to the study of bacteria or the more minute protozoa.

Probably by commencing in this way—using the microscope as a hobby to be followed steadily—the practitioner might end by finding it profitable to use it much more extensively in daily practice than most men think of doing. And certainly he would increase his own professional knowledge, for physiology and pathology are both essential to sound practical medicine and surgery.

VETERINARY EDUCATION.

Some sweeping changes appear to have been suggested by Major-General F. Smith, late of the A.V.S., in his paper read before the recent meeting of the National Veterinary Association.

The chief complaint against the present syllabus, as laid down by the Royal College of Veterinary Surgeons, is that it entails too much science and too little practice; and to rectify this, without adding another year to the present four years course, the almost total abolition of chemistry, zoology and botany, and the substitution of more practical and clinical work is recommended. Everyone will agree with the General's remarks on an unpractical man being a standing reproach to his profession, and he will receive the support of almost the entire profession in suggesting more practical tuition in the Colleges, but when he suggests replacing the most important scientific subjects with this tuition, he will find many to disagree with him.

No matter how deficient a graduate is in practical work when he leaves his College, so long as he has a good foundation of the necessary theory, a few months in practice will very soon furnish all that is missing, but once outside of his College without his science, never again will he be given an opportunity to acquire it.

Of course, the grave objection to this, is that the unpractical graduate gains his experience at the expense of his clients, but, apart from this, he eventually becomes a much better man than the unscientific empiric who would be produced by the proposed revised syllabus. The fact is, that the time is now ripe for the addition of another year to the course. This is absolutely necessary to allow more attention to be given to animal management and hospital practice, so that none but the most practical men may be turned out.

If another argument in favour of the introduction of a fifth year be required, one can at once point to the present post-graduate courses. These classes were originally commenced with a view to refreshing and bringing up-to-date those who had been some time qualified, but what have they developed into now? They are looked upon as part of the instruction that must be gone through before a student can with safety leave his College. Now-a-days, no one can hope to obtain an appointment, worth having, without producing proof that he has done a post-graduate course.

The Royal College gives a diploma saying a man is qualified to practise veterinary medicine and surgery, but the general public say he is *not*, unless he has done a post-graduate course.

Surely this is sufficiently convincing in itself to show the necessity for increasing the course and teaching.

Regarding practical instruction, we cannot do better than look to the medical profession, where students gain all their experience in their hospitals and schools without arousing the anger and petty jealousies of neighbouring practitioners. Why can the same not be done in the Veterinary Colleges?

Whatever may be said or written against cheap practice at the Colleges, the fact must not be lost sight of, that a more efficient profession would be the result: and, after all, the profession exists for the good of the community, and not the community for the profession.

To again return to the suggestion of adding another year to the present course; one must draw attention to the fact that a medical student goes through a course of five years' duration, and one must enquire what objections are there to a veterinary student doing the same?

One often hears of the professional equality of these two, and the right of the latter, to receive the same salary as the former, when both are fully qualified and employed by some municipal body; but is it not bordering on conceit to imagine that as much is taught in a veterinary college in four years, as is taught in a medical college in five years? To further show how much another year is required at College, one may ask how much *practical* work during the present four years course is devoted to the following;—(1) Testing of milk for percentage of fat. (2) Physical and chemical examination of urine. (3) Taking an opsonic index. (4) Application of the agglutination test. (5) The preparation of the many nutrient media and stains at present in laboratory use. (6) Making an elementary toxicological examination at a post-mortem, or (7) making an accurate blood count.

In the writer's experience at College, all the above received absolutely no attention whatever from a practical point of view, yet who will deny their vital utility in modern veterinary practice. Enough has been said, more attention to subjects like these; to canine and bovine anatomy and physiology; to animal management, and to hospital practice positively demands a five years course.

So much for the suggestion of increased teaching in the Colleges, and now to give attention to the suggested decrease. It is difficult to understand why it was not proposed to allow biology and chemistry to remain as they are, surely this would not prohibit the introduction of more practical work.

In General Smith's reply to criticisms on his paper, he said that he was convinced that no amount of scientific knowledge was of any use unless it had behind it a fairly solid practical backing. This cannot be denied, but from it, it would appear that he does not condemn scientific knowledge when there is behind it this practical backing. If he does condemn it, it will be difficult to reconcile his remarks with his own position in the profession, and one will feel inclined to ask the author of Veterinary Physiology, if even a first edition of this standard work would ever have made its appearance, had he not been in a position to place letters after his name signifying a qualification in chemistry. The truth is that the sciences of biology and chemistry constitute the very foundations of all medical science.

Not long ago, a distinguished bacteriologist, remarked of a man who had been doing a course under him, that So-and-so was a most painstaking and diligent worker, but he doubted if he would ever excel in investigation, as he just lacked that amount of biological knowledge necessary for original research. And is it not true that almost all the original investigators in veterinary medical problems, and a considerable number in human medical problems, are men who also hold degrees in science?

Further, what else is it but science that is to-day causing the veterinary profession to advance by leaps and bounds? and to show that this advance is not an imaginary one, is it not a fact that the committee appointed to proceed to India to investigate foot-and-mouth disease, is about the first committee on record appointed to investigate an animal disease that has not had a medical man as one of its members?

Throughout the whole of medical work practice is one thing, and science is another. What use in a laboratory is the practical workman without scientific knowledge? The preparation of culture media, stains, films, etc,, and the cultivation, isolation, and identification of organisms is not all that is required in a laboratory.

No one knows better than General Smith himself that most of the above-mentioned work can be performed in a military hospital by a private soldier after a little training; but there his sphere of usefulness ends, and all deductions from his work are made by the medical officer in charge. What is one of the chief differences between these two men?—the one has no knowledge of science and the other has. The one is an empiric, and the other is a scientist. Abolish science from the curriculum, and instead of producing scientific veterinary surgeons, quacks and empirics will be the product.

Finally, now that universities are opening their doors to veterinary students and granting to them degrees in science, is not the present time most inopportune for the introduction of such measures as were suggested in General Smith's paper? Even with the present teaching, the number of students going in for these degrees are few enough to almost discourage the authorities giving them, and it requires very little thought to see that to abolish science in the slightest way would be the first step towards completely exterminating these degrees, which would mean that the profession had taken its first retrograde step, and commenced a downward, rather than an upward progress.

India. M.R.C.V.S.

At this date three years ago the shipments of Canadian Cattle from Montreal totalled over 66,000. This season the number falls short of 6,000.

CLINICAL NOTES.

By J. H. PARKER, M.R.C.V.S.

DESTRUCTION OF DOGS BY CHLOROFORM.

I have used this method of destroying dogs for the last ten years, and can thoroughly recommend it as a quick and painless method of destruction, especially for the smaller breeds of dogs. I have destroyed dogs up to the size of a retriever, but I am told it does not act well on larger dogs. The method consists of injecting one to two drachms of Chloroform into the nostril with a syringe, keeping the head up, so that it will not run out again: to quicken the inhalation I put my finger over the other nostril. As soon as the chloroform takes effect they go off very quietly and frequently wag their tails as if they like it.

SLOUGHING OF THE VULVA.

About the middle of May was called to a mare foaling, and found the head and near fore leg protruding, and the mare considerably swollen as if the foal had been there some time. As I could not get my hand in to find the other leg, I amputated the head and found the leg lying cross ways near the os uteri. Applying ropes to both legs, the foal was delivered with little trouble. The vulva and vagina were very much swollen, and of dark mahogany colour. In four days the swollen parts began to slough off and left a channel running down towards the udder. Antiseptic dressings were applied and the parts healed up, but the mare was noticed to be lame in the near hind leg. She was turned out to grass, and about a fortnight afterwards the owner was in the field when he saw the mare lie down and start bleeding from the womb, and she quickly bled to death.

ABSTRACTS FROM FOREIGN JOURNALS.

THE SOURCE OF LEPROSY.

Dr. C. Engelbreth, of Copenhagen, has recently published *Dermatologisches Wochenschr.*, 1912, Nos. 24 and 25) a long article upon the source of leprosy, which may prove of great importance. Leprosy, he remarks at the commencement, occupied an uncertain position in pathology till Danielsen, the great Norwegian leprologist, compared it with tuberculosis. The analogies between the bacilli of the two diseases, and the fact that cases of leprosy always react to tuberculin, led Danielsen to maintain that leprosy and tuberculosis are "twigs of the same stem;" and other observers have since thought that leprosy, from the number of bacilli and their arrangement in the tissues, should be attached to the tuberculoses of oxen and fowls. But, though leprosy may be a variety of tuberculosis, the connection between the two diseases is not yet fully explained.

The author then sketches the history of leprosy, some points of which are difficult to explain. The disease appears to have its home in South Western Asia, and appeared from the earliest historical times in Asia Minor, Egypt, Arabia, and India. It became greatly extended in these countries at the time when their civilisation reached its highest point. From Asia Minor it spread westward to Greece and Rome at the height of their development, and then followed the stream of civilisation northwards to France and Germany and thence to other European countries. In the year 1200 there were 19,000 establishments for the isolation of lepers in Europe.

From very early times the disease has been generally regarded as contagious, and a more or less rigorous isolation of lepers has always been practised. At the present time the majority still believe it to be contagious, but there is now a school of anti-contagionists. The latter maintain that no case of contagion has yet been definitely proved, while even the contagionists admit that transmission of leprosy by contagion is very difficult.

After its great prevalence in Europe in the Middle Ages, the disease suddenly and inexplicably disappeared from some countries—as England and Denmark—in the sixteenth and seventeenth centuries. In other countries—as Sweden, Norway, and Italy—it persisted; though it was combated as vigorously in the latter countries as the former. This suggests that some intermediate factor is necessary in the transmission of leprosy, and that the disappearance of this factor from some countries and not from others led to these otherwise unaccountable disappearances of the disease. The author suggests that this hitherto unrecognised agent in the transmission of leprosy may be the goat.

After briefly sketching the history of the goat as far back as it can be traced, the author then enters into a detailed comparison, too long for reproduction, of the past and present distribution of goats and leprosy throughout the world. As a result he discovers a surprising relation between the existence and prevalence of leprosy in any country or part of a country, and the number of goats kept in it. Leprosy exists wherever goats are kept in considerable numbers. In England, Denmark, and other countries from which leprosy has now vanished, we find that goats were abundant at the time the disease existed, and that, when cattle and sheep supplanted the goat, the disappearance of leprosy soon followed. In Norway at the present time the number of goats is diminishing and simultaneously the amount of leprosy is decreasing. The author cites many instances of different countries in both the Old and New Worlds to prove the close relation of the goat population to the prevalence of leprosy.

Finally, the author essays to prove the exact connection of the goat with leprosy. He commences by calling attention to the work of Kedrowski, in Moscow, who experimentally inoculated rabbits, guinea-pigs, mice and rats with leprosy, and found that the disease, when inoculated into these animals. completely resembles tuberculosis. From this the author deduces the existence of an internal disease of the goat which resembles tuberculosis in its aspect, but in reality is a caprine form of leprosy;

and he points to the recent work of Karl Hertha, of Berlin (1910) upon caprine tuberculosis, as affording evidence of such a disease.

According to the author's interpretation of Hertha's work, there are two different forms of tuberculosis in the goat. One exactly resembles bovine tuberculosis; showing, as post-mortem lesions, small fresh nodules and large caseous ones, conglomerations of the latter, tuberculous "caverns" and abscesses. In this form tubercle bacilli are easily demonstrated. The other form is quite different. The post-mortem lesions consist only of firm grey or grey-yellow nodules, with a smooth-walled capsule and semi-firm or fatty contents which can easily be enucleated *in toto*. These peculiar grey nodules are found in all the internal organs, and especially in the liver, spleen, and lungs. No tubercle bacilli can be found in them; but their tuberculous nature is established by inoculations of rabbits and guinea-pigs. Hertha classes the bacilli thus recovered with the bovine type of tubercle bacillus. Dr. Engelbreth, however, points out that this peculiar form of caprine tuberculosis described by Hertha corresponds completely to the description given by Kedrowski of the lesions caused in his experimental animals by the inoculation of leprosy into the blood-vessels, and that it also corresponds with lesions which Danielsen has described as leprosy in the internal organs of leprous human beings, especially in the liver. The author therefore concludes that human leprosy arises by contagion from leprous goats, and that the peculiar form of tuberculosis described by Hertha in the goat is really caprine leprosy.

Turning to the question of how the disease is transmitted from goat to man, the author remarks upon the fact, repeatedly pointed out of late years, that leprosy usually commences in the nose. He suggests that the lepra bacilli are taken up by the finger nails from the goat, and inoculated into the nose.

Another clinical observation is that the Javanese, who go barefoot, commonly become infected upon the feet; and this suggests that the excrements of the goat are particularly dangerous in infection. It may be added that Boeck has found that the fæces of leprous human beings are especially rich in lepræ bacilli. Finally, the demonstration of visceral lesions of leprosy in man, indicating an infection by ingestion, immediately suggests goats' milk as a vehicle of infection.

Among the goats themselves, the disease is probably transmissible from one to another, and it is also probable that man may transmit it to goats.

In concluding, the author refers briefly to the bearing of his theory upon the campaign against leprosy. His main advice is to test all goats with tuberculin, and to destroy all those which react—the assumption being that leprous goats will react to tuberculin, as do leprous human beings. In addition to this, he suggests that the medicinal use of "tuberculin" prepared from leprous goats might do some good in the way of alleviating or curing human leprosy.

Foot-and-Mouth Disease and the Microbes of Pus.

It has long been well known that, in a herd affected with foot-and-mouth disease, certain animals seem resistant to contagion. Usually this is ascribed to natural resistance to infection; but M. Esnault, a veterinary surgeon of Creully, advances another explanation. From a series of observations which have come to his knowledge, he deduces a principle from which he hopes that a simple method of immunisation against foot-and-mouth disease may be evolved. This principle is that every animal *in a condition of suppuration*, when introduced into a centre of foot-and-mouth disease infection is resistant to the disease.

M. Esnault quotes the following cases as being some of the facts which appear to authorise his statement.

Four pigs, two males and two females, were bought, and the males were immediately castrated. Five or six days later, all four animals were introduced into an infected piggery. The females alone became infected, and the males remained healthy.

A bull, when tied up, was found to have deep suppurating wounds round the head. Cows affected with foot-and-mouth disease were at liberty in a pasture; and the bull was turned out with them in order to have all the sick animals together. The bull remained free from foot-and-mouth disease.

An ox, having a deep wound in the shoulder, was placed in an infected centre, and remained free from infection.

A heifer having a serious wound in the thigh was placed in an infected herd, and remained free from infection.

In offering these observations, M. Esnault asks practitioners to test the hypothesis he has founded upon them. If it is true that there is really an antagonism between the microbe of foot-and-mouth disease and the microbes of pus, the discovery will be of immense service to agriculture.—(*La Semaine Vétérinaire*).

W. R. C.

[This hypothesis may be worth the attention of readers in countries in which foot-and-mouth disease seems permanently established—such as India.—*Transl.*]

LIVERPOOL UNIVERSITY VETERINARY MEDICAL SOCIETY.

A general meeting was held in the Veterinary Anatomy Department of the University, on Friday, July 19th, at 3.30. The President, J. T. Share-Jones, Esq., occupied the chair, and there were present: Messrs. T. Dobie, E. Woods, Frank E. Jones, E. H. Stent, H. G. Hewetson, F. A. Bell, J. B. Wolstenholme, F. S. Warburton, J. P. Heyes, W. J. Fletcher, and A. Richardson.

Apologies for non-attendance were received from Messrs. H. Sumner, A. Taylor, D. Hughes, and S. Faulkner.

The minutes of the previous meeting were read and confirmed.

Mr. A. W. Noel Pillers, F.R.C.V.S., was elected a member of the Society.

Before the ordinary business was introduced, the Secretary, on behalf of the meeting, extended the hearty congratulations of the Society to the President on his success in the recent election to Council of the Royal College of Veterinary Surgeons.

The following resolution was unanimously passed, proposed by the Secretary, seconded by Mr. J. B. Wolstenholme:—In consequence of the amalgamation of this Society with National Veterinary Association, a poll tax per member will become payable in January, 1913, and it is agreed therefore that Rule 9 which reads "any member whose subscription shall remain unpaid for three months after the annual meeting shall be applied to for payment by the Treasurer, and if the application be not complied with before the next quarterly meeting of the Society, he shall cease to be a member of the Society"—shall be strictly enforced after December, 1912

A demonstration on the following pathological specimens was given by Mr. Matheson.

Mr. Atkinson: Hydronephrosis, Pig; Tuberculosis, Spine—Ox; Cyst, Uterus—Mare.
Mr. Bennett: Fibroma, Dog.
Mr. Dobie: Endocarditis, Pig.
Mr. Howatson: Myxo-fibroma, Dog.
Mr. Locke: Carcinoma, Tail—Horse.
Mr. Matheson: Calculi, Kidney—Ox; Necrosis, Liver—Ox; White-spot, Kidney—Ox.
Mr. Mattinson: Tuberculosis, Spleen—Horse.
Mr. Pillers: Johne's Disease, Ox; Sarcoma, Liver—Sow.
Mr. Richardson: Lymphomatosis, Dog (two cases); Sarcoma, Liver—Cat; Anthracosis, Lungs—Dog; Gangrene, Tongue—Dog.
Mr. Storrar: Growth, Mesentery—Horse.
Mr. Sumner: Actinomycosis, Cow; Cirrhosis, Liver—Horse.
Mr. Walker: Necrosis, Gums—Piglet.
Mr. Wood: Fat Necrosis, Omentum—Cow; Tuberculosis, Spleen—Horse.

At the conclusion, a most hearty and sincere vote of thanks was accorded to Mr. Matheson for his past work on behalf of the Society, with an expression of regret that he was leaving Liverpool.

Annual Dinner.

The annual dinner was held in the University Club the same evening, when amongst those present were: The President, J. T. Share-Jones, M.Sc., F.R.C.V.S., in the chair, E. T. John, Esq., M.P.; Prof. Benjamin Moore, M.A., D.Sc., F.R.S.; Prof. Buchanan, M.D., F.R.C.P.; Dr. Mussen; Messrs. Prosper, H. Marsden, A. Richardson, (Liverpool University), J. B. Wolstenholme, E. H. Stent, (Manchester), J. P. Heyes (Wigan), W. Dobie, (Birkenhead), W. J. Fletcher (Wrexham), E. F. Wood (Sutton), F. S. Warburton (Blackburn).

After the Chairman had given the loyal toasts, the toast of "The Veterinary Profession was proposed by Prof. Benjamin Moore, who in an excellent speech eulogised the work done by the profession in the past and prophesied a much greater field of usefulness in the future. He advocated the claims for support from the public funds, and said that the veterinary profession was quite as national an institution as his own profession—that of human medicine. He also supported a much more localised method of dealing with animal disease, and said that some of the restrictions now frequently imposed through a lack of real knowledge of local conditions, were almost ridiculous, and contributed little towards the solution of the problems presented. He had great hopes for the future of the profession.

Mr. J. P. Heyes, F.R.C.V.S., responded.

The President proposing the toast of "Our Guests," said: Preventive medicine was now right at the front. It would well for us to remember that in this great campaign against disease there was only one medicine and that was comparative. Obviously a disease could not be eradicated unless it be dealt with in all the species in which it was manifest. Medical and veterinary practitioners were workers in the same great field, and now that the wave of public opinion in favour of securing better conditions of health and environment had been translated into legislation the public would find the veterinary profession ready and willing to play its part in this fight against disease, though in the past the profession had received little support from the public or from Government. In the annals of veterinary schools and hospitals of England names of benefactors were conspicuous by their absence. Many institutions which dealt with animals such as dogs' homes, homes for stray cats, and Societies for Prevention of Cruelty were liberally supported. He could not attribute it therefore to a want of sympathy on the part of the public towards prevention and cure of disease in dumb animals. Rather would he say that it was due to a want of enlightenment as to the real position in which these educational institutions stood. There was one such institution which had not received a penny piece in the shape of a Government grant during its eight years of existence.

It appeared to require some sudden calamity to disturb a fallacy which was deeply rooted in the public mind. Faith in the unsuitability of certain ships received an appalling shock recently. The advent of motor traction led some to think that the veterinary surgeon's mission was ended. But we have just experienced the visitation of a grave disease which has demonstrated with one fell stroke that a single disease in cattle, apart from any consideration as to its communicability to man, could completely unhinge a branch of commerce worth £18,000,000 a year to Ireland, could immediately plunge our own farmers and butchers into a state of chaos, and could in less than a week raise the price of most articles of food for the people from the collier to the duke. It was not now necessary for him to reiterate the opinion which he expressed last year, that the real work of the veterinary surgeon was only now commencing.

Referring to the present outbreak of foot-and-mouth disease, he said much capital had been made out of the fact that it had been traced to Ireland, that infected cattle existed at Swords, near Dublin, that the Irish Department had no knowledge of it, and further that a quack had been treating them for some other disease. Now Ireland had for years had special privileges conferrred upon it in regard to some agricultural and animal diseases. It must be said she has utilised these privileges with excellent results (Hear, hear), but of her grant she employs more qualified veterinary surgeons on her regular staff than the Board of Agriculture in London. How many men were employed by the Board of agriculture to deal with animal disease whose names were not on the Register of Qualified Veterinary Surgeons he could not say, but he would be very interested to know, and so would the British farmer, butcher, and tax-payer. (Applause). Ireland had done much for education in animal disease. She had disseminated knowledge amongst the people. In 1900 out of her grant she set aside a sum of £15,000 in order to assist in establishing a veterinary school in Dublin where her men could obtain a complete training. These were only a few of the efforts which had been made. If the attitude which the Irish Department had taken towards the subject of disease be compared with that taken by the Board of Agriculture in London, it would be found that the result would work out very much in favour of Ireland. (Hear, hear). The effect was that Ireland had been wonderfully free from outbreaks of infectious disease prior to the present outbreak at Swords. She had not had an outbreak of foot-and-mouth disease for

nearly thirty years. Yet there were some who would take away these privileges which Ireland had so splendidly utilised, because these cases at Swords were not notified. They do not say what happened to these animals after they arrived in England, for apparently our Central Authority had no knowledge of them from the time of their arrival until after they were slaughtered several days later. He did not blame the qualified officials, he knew them to be splendid and efficient men, but he blamed the system, and he would say this, that those who thought they had a real general and laudable system of notification in England at present were living in a fool's paradise, and the sooner they realised their position the better. Around this question of notification the whole problem revolved.

What was required was a greater degree of decentralisation in administration, with more localised centres for official assistance and diagnosis. A greater degree of familiarity between the farmers and officials should be engendered, so that those in charge of stock might come to regard the officials in the light of helpers and advisers, rather than as they frequently regard them at present, as a type of public persecutor, or prosecutor. The relationship between those concerned is too distant in more senses than one, and about the most unwelcome visitor to a farm, and particularly the smaller farms, is an inspector. (Hear, hear). The farmer regards his visit as a kind of reproach. There are some who do not appappreciate this. I was flatly contradicted on the point a short time ago by some who presume to know the farmer. But I speak with a life's closest association as a son of the soil, who, though perhaps not very old in years, has had that real experience of the farmers to justify an opinion. (Hear, hear). He did not attribute this to officials—he had always found them extremely courteous. But their visits were so infrequent that they were certainly not regarded as the caretakers of the the livestock industry. Until this relationship is improved there cannot be a frank and open system of notification worthy the name. (App.)

We should never learn the actual cost to the country of this present outbreak. Yet fabulous though it was, it was nothing compared to the loss regularly sustained through such slowly proceeding diseases as tuberculosis. These we had always with us. They constituted the great bulk of disease, and with them our people and animals were seething. They formed the great problem which we had to face, and it was particularly in regard to them that a reform in our present methods was necessary.

Yet the few rapidly spreading diseases by which we were occasionally visited served one great purpose to the alarmists who were opposed to any alteration in our present system—who were content to leave even that which was bad alone. They provided them with their stock herring which they persistently trailed across the path of progress. (Applause.)

There were many who appreciated the necessity for reform, some were members of their sister profession, who looked forward to a greater sphere of usefulness for our profession in the future. He was glad to welcome that evening such members of the Medical profession. Professor Moore was not only the prime mover in the campaign for a National Medical Service—he believed also in a National Veterinary Service (Hear, hear.) Above all, he was pleased to welcome Mr. E. T. John, M.P., who had again honoured them with his presence, and than whom the Veterinary Profession had no warmer supporter, no stauncher friend. He asked them to drink to "Our Guests" and coupled with the toast the name of Mr. E. T. John, M.P. (Cheers).

Mr. J. B. Wolstenholme proposed the "Medical Profession."

It gave him peculiar pleasure to be honoured in proposing this toast, for he had the profoundest admiration for the profession, and for its members. In his opinion it was the vocation which afforded its members the opportunity of rendering to the community, the highest service of all. There was no profession in which high ideals, and devotion, had so wide a field, and no profession in which the members had more worthily availed themselves of their possibilities, in fact the medical profession had become the high priest of humanity.

Mr. Wolstenholme referred to the part played by the Medical profession at the inception of Veterinary medicine in this country, and claimed that it had been the tender mother of our profession, and was still leading us on in paths of greater skillfulness and usefulness. Referring to the crisis in the Medical profession, which the passing into law of the National Insurance Act had created, Mr. Wolstenholme expressed his confidence that the dignity and devotion of the profession, on one side, and the whole-hearted esteem and respect of the community, on the other, would find an honourable solution, which would prove to be satisfactory to all.

Dr. Mussen, in replying, alluded to the close association of Preventive Medicine with the Veterinary Profession. In fact, Public Health administration formed the closest tie between the two professions. In this way, he was proud to have been associated with some of the leading veterinarians in Liverpool, to whom Sanitary Science owed a considerable debt. In the sanitation of cow-sheds they had received great assistance from the members of the Veterinary Profession. He hoped that Preventive Medicine would always have the benefit of the experience and advice of an enlightened Veterinary Profession.

Mr. E. T. John, M.P. who on rising was loudly cheered said:—

I have in the first place to convey my thanks to your Committee for inviting me to be present again this year at your annual gathering. I am afraid that my technical equipment and fitness for addressing you today, are just as much as last year, practically a minus quantity, but I daresay you will have long ago come to the conclusion that politicians rarely elect to say nothing when they have nothing to say, but that on the contrary their prolixity is apt to be precisely in inverse ratio to the amount of their real knowledge.

You met last year under the shadow of a great and, it was very evident, acutely felt personal loss, a loss, which probably the lapse of time has only served to emphasise and accentuate. This year you meet under conditions of grave and widespread anxiety for immense national interests of which you are in a very large degree the custodians.

Before dwelling in any detail upon the problem of animal disease, which has with such dramatic suddenness loomed so luridly upon the national purview, I would congratulate you and the public at large upon the solicitude for the Public Health which is evinced in the proposals embodied in the Insurance Act. I do not in the least propose to discuss the controversial aspects of that measure, but I think it is now common ground to all politicians and publicists that the physical well-being of every unit of the community is a matter of legitimate concern to the State, that after considerations of intellect and moral character, the physical condition and efficiency of our people should be the first care of our statesmen, and in passing, one may point out that bodily health or ill health is often no small factor in intellectual vigour and even in moral rectitude. (Hear, hear.)

The great controversy between my distinguished countryman and the great profession which deals with all the ills that human flesh is heir to, I do not doubt is complicated, not only by the natural desire for fair remuneration for such work as has been done in the past, but also by a very laudable ambition that the services rendered by the medical profession to the great mass of our workers in the future should be most mat-

erially improved in character and efficiency. With both these objects, I am sure the Chancellor is in complete accord, and I am satisfied that his desire to meet the views of the medical profession is only limited by perfectly legitimate and proper considerations of finance—by regard for the just interests of the taxpayer for whom I imagine the Chancellor has never been charged with undue solicitude. From the most sordid and material point of view, the combatting and prevention as far as may be of human disease, constitutes a sagacious and statesmanlike policy of the conservation of the economic resources of the nation, and that is happily becoming in increasing degree the first business of Governments all the world over. (Hear, hear.)

It is perhaps just as obvious that the considerations which most magnify the importance of the functions of the veterinary surgeon are the bearings of his activities upon the public health and upon the national food supply. Last year I ventured to place especial emphasis upon the growing need in the conduct of agriculture of the substitution of improved technical scientific knowledge for the empirical methods which had so long obtained, adding that, in that respect agriculture was only sharing the experience of other great industries, particularly that of iron and steel. I am glad to see that appreciation of this fact has at last penetrated into the innermost recesses of the British Department of Agriculture—a Department whose more permanent residents have long been regarded as somewhat of the Troglodyte order of humanity—as interesting survival of the primeval cave-dwellers. (Laughter.) In order to be absolutely just, however, we must recognise that, prior to the advent of its present enterprising and enlightened President, the Department did decide to devote a sum of £50,000 to purposes of agricultural research—a really stupendous effort, sufficient to justify and excuse another half century of lethargy and somnolence.

I am sanguine, however, that both the increased alertness of the agriculturists of Great Britain to their interest in increasing the fertility of the soil, the value and remunerativeness of their live stock, and the growing appreciation by the public of its interest in the prosperity of agriculture, will result in much more adequate resources shortly being placed at the disposal of agricultural and veterinary science, especially when the national interest in the well-being of our flocks and herds is so effectively stimulated by the enforced restriction upon imported supplies, and upon the movement of even domestic supplies.

It is gratifying to see that authoritative organs of agricultural opinion recognize the "practical self-restraint and business-like composure" of the President of the Board of Agriculture during a very trying ordeal. I have no doubt that the Department of Agriculture, both in Ireland and in England have acted with exemplary energy and zeal immediately the presence of foot-and-mouth disease became known, but this does not get rid of the failure to recognise and notify the outbreak at Swords, to detect the presence of the disease either at the port of shipment or on landing in England. You know best how far a person is really "knowledgeable" who cannot distinguish between "timber-tongue" and foot-and-mouth, but it is very evident that reliance has been placed upon inexpert advice, greatly to the detriment of immense interests.

Among the many questions which this misfortune raises is that of the relationship of the several existing Boards of Agriculture in Ireland, Scotland and England. It is perhaps, natural, that agriculturists should be disposed to demand 'one coherent, cohesive and unanimous policy' in matters of animal disease, and it is obviously desirable that there should be the closest co-operation and complete mutual understanding between the several Boards, but it is very doubtful whether it is greater centralisation that is needed. On the other hand, the conspicuous feature of the situation is that Scotland and Wales have been happily exempt from the present trouble, but that they are equally involved in any prohibition of importation by foreign countries. The irony of events was admirably illustrated by the plea of the President of the Board of Agriculture to the Argentine Government that they should not impose a general restriction, when the disease was confined to two limited areas in England and Ireland respectively.

It is evident that the heads of separate Departments for Scotland and Wales could then, and could still, more than three weeks later, issue certificates of complete immunity for their respective areas. It was quite legitimately claimed that similarly in the Argentine there were provinces of immense extent, equally immune. It seems to me, therefore, that a considerable measure of territorial sub-division may be a very substantial advantage, rather than otherwise. It is notorious that as regards human ailments, the countries which rely most constantly and instantly upon drastic measures of quarantine are those where the science of sanitation and hygiene are most backward, such as Spain and Turkey. And to the lay mind it rather seems that the necessity for the immense dislocation of business involved, say, in the complete prohibition of importation of cattle from all Ireland, and the drastic interference with movements of stock in this country, is the measure, not of our knowledge, but of our nescience. This feeling is very strongly confirmed by the outspoken evidence tendered by your Chairman before the Foot-and-Mouth Departmental Committee, where he described the lack of research work in animal disease in this country as "a disgrace to a great nation"—that we are "quite a long way behind the most insignificant of continental countries." (Hear hear.)

That apparently is the condition of expert knowledge in this country. The state of popular knowledge was illustrated by the reply of your Chairman to what has proved to be a very opportune and apposite question by a colleague of mine, Mr. John Hinds, who enquired whether "in some parts of Wales foot-and-mouth disease could exist for a considerable time without the people knowing it." That evidently has been the condition of things in Ireland, in spite of the possession of a much more adequate staff attached to its Board of Agriculture there than obtains in this country.

The popular assimilation of such knowledge as exists is thus proved to be the crucial test of all our systems, and in that respect the need for decentralised administration has been strikingly demonstrated. We really look to the leaders of your profession to devise methods of local control, of wider popular knowledge, of frequent inspection, and prompter notification, which would enormously diminish the loss, disturbance and inconvenience now brought about by any outbreak, however limited and remote the area of the original trouble may be. (Applause).

I see Sir Ailwyn Fellowes has described the present as "the most serious situation in the agricultural world since 1868." If we escape any further spread of this fell ailment we may well congratulate ourselves, as I see that in September last foot-and-mouth disease existed on 39,000 farms in Germany, and in October on over 14,000 farms in France. These facts illustrate the grim possibilities of these calamitous visitations—the last was estimated to have cost this country £2,000,000—and justifies to the hilt a liberal expenditure, not alone upon scientific research, but upon the effective popularisation of its matured results.

I mentioned that the importance of your profession lies largely in its influence upon our food supply—not alone in the inspection of meat, and milk, and agricultural produce generally, but on the great contribution it is in your power to make to the success of the live stock industry generally. Unless we all become vegetarians,

this is a problem of increasing urgency and acuteness. (Hear, hear). I see that in this country it is recognised that we are not keeping pace with our growing consumption, and agriculturists are deploring the wholesale and wasteful slaughter of lambs and calves. In the United States it is admitted that the increase of stock is far short of that of population—that with no increase in their flocks and herds they have 16,000,000 people more to feed. We are told that America is making herculean efforts to make up for lost ground, and is scouring the Contineut for store stock, while Canada is wisely organising a great scheme to increase her flocks and herds. It is not surprising that an acute observer should conclude that British stock farming has splendid opportunities before it. The extent and value of the industry is to-day enormous, and it is of vital importance that it should further increase. (Applause).

One of the most gratifying features of British agriculture is the character of its export trade in live stock, amounting in value during the last six months to more than £750,000, and including cattle of an average value of £66 17s. 7d. per head, the Argentine paying as high as an average of £149 15s. 6d. I notice with satisfaction that the Board of Agriculture is increasing its facilities, which were deplorably deficient, for the inspection and certification of cattle intended for export. This is a detail of organisation well worthy of greater attention. (Hear, hear).

I notice that the Farmers's Society recently described agriculture as the "oldest, largest, and most precarious industry." There is probably much justification for the latter adjective, although I have known agriculturists of protracted experience claim that nothing better repays assiduous and unremitting industry than mother earth. The uncertainties of weather constitute always in this country a great and grave factor, but there is one risk —that of disease, and its attendant losses—which it seems to me might easily be greatly minimised. I doubt whether the practice of wholesale insurance of farm stock—either material or otherwise—is at all widespread. My own experience is that the premiums generally demanded are excessive, and that farmers have good grounds for hesitating to pay them.

The attention given to this matter in other countries is very striking. In Belgium there were in 1907 no less than 1734 societies, of which 1073 insured cattle exclusively. Mr. Seebohm Rowntree declares the Belgian system to be both cheap and safe, as the great majority of the small local societies reinsure a portion of their risks in Federal Insurance Societies which are subsidised by the Government.

In Holland there were in 1906 1236 societies with a membership of 111,458 persons, and insuring in all 345,371 animals, the percentage lost being in horses 3 per cent., cattle 1·9 per cent., pigs 6 per cent., and sheep and goats 7·7 per cent.

In France the Department of Agriculture has since 1898 contributed an annual grant of from £20,000 to £30,000 in aid of Agricultural Mutual Insurance. The Societies have increased in 12 years from 1469 in number to 8780, in membership from 87,072 to 478,000, and in capital insured from £2,366,000 to £29,000,000. The annual premium is 1 per cent. of the value insured and the compensation paid 80 per cent.

In Switzerland some of the cantons and the Federal Government contribnted substantially in 1906, the amount being £24,510, the number of cattle insured being 547,518, the compensation paid on account of 14,285 animals amounting to £78,712.

In Germany the principle of live stock insurance has been most extensively developed, the small mutual societies there number over 7,000. In fact I am informed that practically every country in Europe has developed some system of mutual insurance of live stock, and in Great Britain the problem of tuberculous cattle is much accentuating the need for similar action. In any case, the principle of averaging the risks is as desirable in Agriculture as in any other business—the loss may be to the individual crushing, but to the aggregate industry quite inconsiderable. (Hear, hear).

It has occurred to me that if on reasonable terms, veterinary surgeons would undertake to periodically inspect and certify the stock upon farms, and in some measure reassure Insurance Companies as to the care and intelligence of the farmer himself, insurance might be greatly cheapened, and to this extent the precariousness of the business distinctly lessened. It seems to me that in this direction there is room for increased usefulness on the part of your profession, which I am satisfied is likely to play a part of increasing importance in the general economics of agriculture. (Applause).

I trust you may shortly be able to give Great Britian as a whole a clean bill of health as regards foot-and-mouth, that you may find swine fever a less insoluble problem, and that the mysterious new-comer "Johne's disease," for which Conservative members of the House of Commons seem to regard me as in some way especially responsible, (laughter) may also either cease to trouble or become wholly tractable to your skilled manipulation. I wish your Society a year of enhanced usefulness, prosperity and success. (Loud applause.)

Professor Moore said there was one item which was not on the programme but which they should not omit. He would not like them to part without drinking the health of the President. Share Jones was a man of whom they might well be proud. In addition to his merits as a veterinarian which they all knew, he was a real scientist, one who was held in the highest esteem by his university colleagues. A strong progressive in policy, he was doing much for his profession, upon the advance of which his unbounded energies seemed to be concentrated.

The lead which he gave, others might profitably follow, and he had great pleasure in giving them the toast of his health.

The President suitably responded, and the meeting terminated.

ARNOLD RICHARDSON, Hon. Sec.

The Growth of Bone.

The current teaching of the surgical and pdysiological text books concerning the growth of bone is that which has been for many years handed on as it was received from a former generation. Students are taught in good faith on the strength of experiments of ancient date that new bone can be formed by the periosteum. When a bone is fractured the regeneration of its shaft is believed to be due to the bone-forming activity of the periosteum, and when the periosteum is extensively detached from the bone, or destroyed, it is held that new bone will not then be formed.

These views Sir William Macewen* does not subscribe to. He believes that the periosteum has no osteogenetic power at all. As a limiting and protecting membrane it is of great use, but it can neither produce nor reproduce bone. Indeed he thinks one of its functions is to limit the growth of bone and prevent the bone-forming cells from extending their activities into the soft tissues. The growth in length of bones is mainly carried out in the epiphyses: that, of course, no surgeon can possibly question. Yet Sir W. Macewen finds that if these are artificially removed some growth takes place from the diaphyses. For the details of the experimonts upon animals and observations upon patients which have led him to these conclusions, the book itself must be consulted.

*_The Growth of Bone._ By Sir Wm. Macewen, M.D., F.R.S. Glasgow: James Maclehose and Sons. Price 10s. net.

Sir William's teaching is calculated to modify very considerably current surgical practice in many directions. Thus he has shown by operations upon human subjects that osseous grafts to repair deficiencies in the bones of the skull, limbs, etc., can be quite successfully used, even although there is no periosteum attached to them. A number of skiagrams from actual cases support the clinical evidence cited. In one case a patient in whom a large part of the lower jaw had been destroyed had the gap filled by a piece cut from one of her own ribs. Not only did the graft "take," and so remedy a most horrible deformity, but the gap in the rib soon filled up. We are so much accustomed to look to the Continent for all pioneer work in orthopædic surgery, that these valuable contributions to science by a British surgeon are doubly welcome.

L'Ecole Nationale Veterinaire de Lyon.

The celebration of the 150th anniversary of the foundation by Bourgelat of the Veterinary School at Lyon will take place on the 26th and 27th October next. Invitations have been sent out to every known Veterinary School in the world, and it is intended to make the gathering an occasion of celebrating not only the memory of the Founder of the first Veterinary School, but also the immense progress made since Bourgelat, and to show in a great manifestation of scientific solidarity, the striking services rendered to medicine and to agriculture by the Veterinary profession throughout the world.

The meetings will be presided over by M. le Senateur Pams, Minister of Agriculture, and will comprise, in addition to the opening ceremony, an official visit to the School, a Banquet in the Refectory, given by the School to the Minister and other official personages, the inauguration of a monument erected to the memory of Professor Galtier, and a ceremony of homage in memory of the late Director, Professor Arloing. The celebrations will conclude on Sunday, October 27th, by a banquet and Reception in the Salons of the Hôtel de Ville, offered by M. Herriott, Mayor of Lyon, and the Municipal Council.

The Tropical Disease Bureau—Publications.

In November the Tropical Diseases Bureau, which replaced the Sleeping Sickness Bureau on July 1st, will commence the publication of the *Tropical Diseases Bulletin*.

Each number will consist of about fifty pages containing classified summaries of the current literature of the tropical diseases; they will appear as a rule twice a month. The annual subcription price will be one guinea, post free; single numbers, 1/6.

The tropical diseases of animals will be treated in a separate publication; the *Tropical Veterinary Bulletin*. This will appear quarterly from October, and will be in the charge of Mr. A. Leslie Sheather, B.SC., M.R.C.V.S. of the Royal Veterinary College, London. For this the annual subscription price will be 10/-; single copies, 3/-

Orders and Subscriptions should not be sent to the Bureau, but to the Publishers, Messrs Bailliere, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, W.C.

A case of foot-and-mouth disease has been discovered at Kilcullen, in Co. Kildare, and others at Walker, Newcastle-on-Tyne.

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period	Anthrax. Outbreaks Con-firm'd	Anthrax. Outbreaks Re-ported	Anthrax. Animals Con-firm'd	Anthrax. Animals Re-ported	Foot-and-Mouth Disease. Out-breaks	Foot-and-Mouth Disease. Ani-mals.	Glanders † (including Farcy) Out-breaks	Glanders † (including Farcy) Ani-mals.	Parasitic Mange. Out-breaks	Parasitic Mange. Ani-mals.	Sheep Scab. Out-breaks	Swine Fever Out-breaks.	Swine Fever Slaughtered. *
GT. BRITAIN. Week ended Sept. 14	7		7		2	62	7	10	17	18	1	43	840
Corresponding week in 1911	13		14				7	12			2	37	394
Corresponding week in 1910		14		14			13	37			1	18	305
Corresponding week in 1909		19		23			13	44			3	17	139
Total for 37 weeks, 1912	583		661		77	530	132	248	2382	5183	175	2290	30080
Corresponding period in 1911	612		763		8	425	145	338			309	1840	21517
Corresponding period in 1910		1041		1249	2	15	270	818			344	1037	9472
Corresponding period in 1909		940		1255			395	1420			474	1290	11713

† Counties affected, animals attacked: London 6, Northumberland 1, Surrey 2, Lanark 1.

Board of Agriculture and Fisheries, Sept. 17, 1912.

	Anthrax. Outbreaks Con-firm'd	Anthrax. Outbreaks Re-ported	Anthrax. Animals Con-firm'd	Anthrax. Animals Re-ported	Foot-and-Mouth Disease. Out-breaks	Foot-and-Mouth Disease. Ani-mals.	Glanders † (including Farcy) Out-breaks	Glanders † (including Farcy) Ani-mals.	Parasitic Mange. Out-breaks	Parasitic Mange. Ani-mals.	Sheep Scab. Out-breaks	Swine Fever Out-breaks.	Swine Fever Slaughtered. *
IRELAND. Week ended Sept. 14	...	...	1	14	...	...	Outbreaks ...		1		1		6
Corresponding Week in 1911 ...	...	...	...	...	...	...	1		4		5		30
Corresponding Week in 1910 ...	...	...	...	...	...	...	...		6		...		...
Corresponding Week in 1909 ...	...	...	...	...	...	...	...		1		2		2
Total for 37 weeks, 1912 ...	3	3	27	258	...	...	52		265		180		1491
Corresponding period in 1911 ...	7	14	...	...	2	3	51		258		97		1617
Corresponding period in 1910 ...	5	8	...	...	1	2	56		355		73		1707
Corresponding period in 1909 ...	5	5	...	...	...	...	67		307		85		1507

† These figures include animals slaughtered and found affected on post-mortem examination.

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Sept. 16 1912

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

The Chemistry of Flower Colouration.

This year's meeting of the British Association has marked—in the Chemical Section at any rate—a very definite stage of advance in the history of botany. Dr. E. F. Armstrong and Prof. Keeble in a paper on the colouration of flowers, have given experimental proof of the brilliant hypothesis conceived by Bateson, that three factors are necessary for the production of colour in a flower—the hidden factor for colour, the factor that enables the colour to show itself, and, lastly the absence of an inhibitory factor, which might almost be regarded as a double negative concept, but at last definite proof has been supplied of the existence of this inhibitory factor.

It is many years now since Prof. Bateson "discovered" Mendel and began, with the school of Cambridge biologists, to extend the scope of his experiments. At first all was plain sailing, but one of the difficulties he had later to contend with was that on crossing white with coloured flowers he got in the second generation two results: the offspring appeared either in the ratio of three plants with coloured flowers and one with a white flower, or three plants with white flowers and one with a coloured flower. To explain this apparent anomaly he hit upon the hypothesis that many white flowers were really coloured, but that they contained, in addition to the factors that produced colour, a third factor that prevented its making its appearance. The idea was a working hypothesis, justified in so far as it helped to group and correlate a number of known facts, but based on no sound foundation. As the result of the work of Dr. Armstrong, Prof. Keeble, and a number of other workers, the mechanism of flower colouration has been established.

Colour appears in a plant as the result of the union between a colourless substance known as chromogen and an oxidising agent known as oxidase. The cells of the red-blooded animal are dependent for their oxygen on the circulating blood. The oxidase, in its relation to the chromogen in the flower petal, corresponds with the oxyhaemoglobin in the blood. When it has not its load of oxygen it is powerless to help the chromogen, and it is known as a peroxidase. The first stage in the inquiry was to try and mimic the process that goes on naturally in the flower. Most white flowers are without chromogen, and in the flowers with which they experimented the authors were able to make sure, thanks to the work of the Bateson school, that they were dealing with such flowers. They supplied their chromogen artificially, making use of some of the colourless coal-tar products, and soaking the petals in a weak solution of them made up with alcohol. Naturally, nothing occurred. The cells of the petal contained only peroxidase—that is, oxidase without the oxygen necessary for it to perform its function. Oxygen was then added in the form of peroxide of hydrogen, and the whole cycle of petal colouration was set agoing. The peroxidase got the oxygen it required and turned to oxidase, the coal tar substances masquerading as chromogen got their oxygen from the oxidase, and the white petals, blushed into colour whenever the oxidase was to be found in their cell substance. But the giving of oxygen to peroxidase is not the first step of this sequence. The chromogen grains are as a matter of fact tightly locked up with the sugar in the plant. Just as Prof. Schäfer reminded us that the various glands of the body are continually sending out their hormones or chemical messengers instructing other cells to burst into active work, so the scent of the flowers is, as far as we know, a manifestation of the first stage in the long sequence of events. As the perfume spreads in the plant the bonds that link the sugar and the chromogen are broken, the peroxidase picks up its oxygen, and, according to the type of chromogen present, the blooms appear in all their several glories. The chromogen can be set free by chloroform, alcohol, and carbonic and prussic acids.

Death has been defined by more than one physiologist as the completing of the act of life, and the changes just described are the changes that occur on the threshold of the death chamber. Ordinarily the plant cell is in equilibrium, but the aroma of the flower is the signal that heralds the end. The water in the cells, concentrated in multiple molecules, breaks down into single molecules; the cell thus becomes swollen, and the downgrade changes set in until death comes at the end. There is a profound truth, and more than an anology between death and night. It is in the hours of darkness that the plant builds up the oxidase that is to call out the signal that the flower has run its full course, that is to announce that the fruit has ripened, and that the end of its activities has been reached. The blackening of the ripe banana, the browning of the cut apple, are actuated by the same mechanism—the union of the oxidase and the chromogen.

And now of the inhibitory factor that masks the latent colour in many of the white flowers. Its existence could be proved if a way were devised to remove it and the latent colours were then to appear. This has nor yet been achieved, but the proof of the contention advanced is cogent. The difficulty has been to show that such flowers possessed oxidase and that it was the inhibitory factor that prevented its operation. The authors have succeeded in removing the inhibitory factor by prussic acid, and they have then found that the colour from their coal-tar chromogen appeared just as theory demanded.

This experiment and the others by which the general theory has been worked out is a triumph for the biochemists, and justifies the many efforts which for the last few years, they have been making to carry chemistry into what is almost a new sphere of activity. The achievement is important in its actual results, and still more so in the future developments which it foreshadows. As Prof. Keeble pointed out in his address to the botanists, there is much that is obscure in the regular cycle of activities that the plants alternate through by day and night. These, there can be no doubt, have their chemical counterpart, and, there can be little doubt, have their chemical cause.

Drainage from Tarred Roads—Damage.

At a recent meeting of the Amersham Rural District Council, counsel's opinion was submitted from Mr. W. A. Casson, barrister-at-law with respect to the claim of Messrs. Beckley and Holliman, watercress growers, The Moor, Chesham, this firm having claimed in respect to alleged damage to their watercress beds through the draining of water from tarred roads. In the course of his opinion Mr. Casson states:—

"The point in this case is quite a new one so far as the Courts are concerned, for there has never been any litigation on the subject in the High Court. The practice of tar-spraying roads is quite a recent one, but it is now a well-established one, and the question arises whether a local authority can be held liable for any damage resulting from the particular kind of material used. It is quite clear that a local authority cannot be held liable for any results that follow the drainage of the surface water from a road by reason of its entering any watercourse if such surface water carries with it any material, *i.e.*, of a poisonous nature, which may have dropped on the road by a private person. But the case is different where the local authority themselves place tar or any other deleterious substance on the road, as if they do so they must take all reasonable and proper precautions to prevent it causing injury to any stream of water. The owners of a stream may be bound to take the surface water from the roads, but the easement to

which they are subject cannot be increased so as to compel them to take dirty water in-tead of clean water. It has been held in Cawkwell *v.* Russell (1856) that where a man has a right to send clean water on another's land he may be prevented from sending any water at all as soon as he begins to send dirty water. Thus it is evident that the Local Authority can acquire no right to send tar-polluted water where they have previously sent ordinary surface water into a stream. In the case before me the Amersham Rural District Council clearly injured the watercress beds of Messrs. Beckley and Holliman, and I doubt if they would have a good defence on the merits to an action for damages resulting from this injury, and I am therefore of opinion that the council should compromise the claim on the best terms possible. I am not informed whether a writ has been issued against the Council within the time limit fixed by the Public Authorities Protection Act, 1893, but in view of the case Hague *v.* Doncaster Rural District Council (100 L.T. 121 ; 7 L.G.R. 129), in which it was held in somewhat similar circumstances that there was a continuous injury or damage, and that the time limit did not therefore apply, an action is still maintainable. I think that the Council will be well within their legal rights in compromising the claim, and that any payment made in pursuance of an agreement to compromise would be a legal payment, and would not be liable to be surcharged."

Acting on counsel's opinion, the Amersham Rural Council resolved to settle the claim forthwith.

Tuberculin Testing in Ross-shire

The North Star has a long article on the value and uses of the tubereulin test, giving an outline of the present position of the question, in which it says :—

"It is a common belief that there is no danger to milk or to the human being where the udder of the milking cow happens not to be visibly diseased, but too often it is found that the disease exists in the animal all the same. Milk from cows even in the initial stages of the disease may be as virulent as in cases of more pronounced tuberculosis. And along with that, the bacilli may come into the milking pail in various ways—such as from soiled utensils or from contact with animals or anything which may have received infected matter from animals affected with the disease.

"Mr. Gair, M.R.C.V.S., Dingwall, states that in no case has he found an affected cow among stock that has been raised by and among the crofters themselves. Where tuberculous affection has been detected, the cow in every such case came by way of promiscuous 'dealing,' that is to say that the disease came to the north by way of the southern market.

"Colonel and Mrs. Stewart Mackenzie, of Seaforth, have very handsomely encouraged the movement for the raising of healthy cattle by their series of prizes to both the Wester Ross Farmers' and the Ross-shire Crofters' Shows. Mention should also be made of the efforts of Major Cuthbert, the president of the Ross-shire Crofters' Club, who, along with Veterinary Surgeon Gair, held a great number of meetings among crofters and others with the view of drawing attention to the importance and urgency of the movement."

An Offer from British Columbia.

The following is from a letter from an Officer Commanding one of the Canadian Militia regiments in British Columbia, who is desirous of obtaining a qualified V.S. for his regiment :

"This is one of the largest horse and cattle districts in Canada to-day, and with the *entrée* given by the officers of the regiment a comfortable living and a free out-of-doors life is certain. We are in the Dry Belt, which means that we have lots of sunshine and little rain. Our winters are cold but not long, and no winds and long cold spells as on the prairies. The age limit for Canadian Militia is 45, the pay while in camp is 8s. for a Lieutenant, and there is also an allowance for examination for each horse prior to camp.

There will be an examination before one is allowed to practice in B.C., but for a young man I am told that the exam. presents no difficulties.

It is desirable that any one coming out should have a moderate supply of funds to tide him over until he gets his permit from B.C."

[The estimate of "a comfortable living" is, of course, an unknown quantity to us].

ARMY VETERINARY SERVICE.

Extract from *London Gazette*.

War Office, Whitehall, Sept. 17.

Territorial Force. Army Veterinary Corps.

A. C. L. Davies-Bunton (late Sec. Lieut. Welsh Border Mounted Brig. T. & S. Col., A.S.C.), to be Lieut, Dated Sept. 18.

Regular Force. Army Veterinary Corps.

The undermentioned officers embarked in Transport "Rewa" on 12th inst. for a tour of service in India :—Lieuts. E. C. Doyle, R. G. Thwaytes, R. H. C. Higgins.

The following officers have been selected for employment with the Egyptian Army :—Capt. F. R. Kelly, Lieut. B. A. Jarvis.

Lieut. J. J. M. Sontar, attached to the Egyptian Army, has been granted three months leave to England.

At an examination for Commissions in the Army Veterinary Corps recently held at Aldershot the following gentlemen passed : H. E. A. L. Irwin, T. J. Davis, J. Going, F. B. Sneyd, and U. W. F. Walker.

OBITUARY

Thomas Bazley, M.R.C.V.S., Hilperton, Trowbridge.
Graduated, Lond : Dec : 1881.

Mr. Bazley, who was known throughout Wiltshire, died suddenly on Wednesday night, 11th inst., at his residence at Staverton, near Trowbridge, from heart failure, at the age of 65. Mr. Bazley had been medically attended for some time, but was able to continue in the practice which he has followed in Wiltshire for the past 37 years He was an inspector under the Board of Agriculture and County Council, and was a frequent witness at R.S.P.C.A. prosecutions. Only a few days ago Mr. Bazley took part in the marriage ceremony of one of his daughters, at Hilperton church. The funeral took place on the Saturday.

CORRESPONDENCE.

CASTRATION.

Sir,

In reply to Mr. Mayall, we generally have five men for casting colts : one at the head, another at the tail, and three at the rope on the off side. If the near fore and hind legs can be handled and brought close together, the animal will fall almost on the ground he stands on. As stated, I like the écraseur for yearlings, and find it helps to stop the bleeding if the cord is pinched an inch higher than is intended to remove it (until the colt kicks). They don't swell so much as they do after the iron.—Yours, etc.,

J. H. Parker.

Sir,

In the various letters that have appeared upon this subject, none of your correspondents touch on a question which must, I think, have sometimes occurred to the minds of several of them. Here it is!—and, in stating it, I desire first to call particular attention to the fact that we qualified veterinary surgeons are never tired of vaunting our own superiority to the unqualified "quacks." In every respect we claim infinite superiority—in scientific knowledge, in practical skill, and, no less than these, in humanity to the poor patients. Well, in this operation of castration—by far the commonest of all veterinary operations, be it remembered—in what respect do our methods differ from those of the never-to-be-sufficiently-reviled quacks? Are we more truly surgical than they are, more skilful in any way, and, above all, we are more humane?

Now, I know that, at this time of the day, there are a good many veterinary surgeons who will unhesitatingly answer "Yes," and can quite justly point to their own methods of castration as superior to those of any unqualified man. But there are a great many more of whom it may fairly be said that in their performance of castration they are not one whit superior to unqualified men, and in one or two points are often inferior. They are little, if at all cleaner than unqualified men; they are certainly no more skilful, and often less so; and certainly, also, they are as rough, as brutal, and as callously indifferent to the suffering they cause, as the commonest country side gelder. They work by the same rough-and-ready methods which are most favoured by the unqualified men; and the sole difference between the two is that the unqualified man usually performing the operation more frequently, often acquires greater manual dexterity in it than the qualified. And perhaps of no method of castration can this be said so forcibly as of the barbarous "standing operation."

The whole subject of castration—the deliberate mutilation of an animal to increase its monetary value to its owner—is not a pleasant one to contemplate. The most charitable description that can be given of it, from a humanitarian point of view, is that immortal arch-episcopal one of "*a regrettable necessity*." But surely as a veterinary surgeon is popularly supposed to exercise some sort of humanitarian functions, and as castration is, and probably always will be, so common in many veterinary practices—surely we may fairly be expected to take at least a little care to lessen its cruelty! Some of us do so, I know; but there are others whose words and actions concerning this single operation really suggest that they have no conception at all of the meaning of such words as "cruelty" and "humanity."—Yours faithfully,

"MEPHISTOPHELES."

THE STANDING OPERATION.

Sir,

I should like with your permission to record my opinion and give my experience of the standing operation and the use of the wooden clam. I venture to say that if those who practise it, were each to come forward, Mr. Mayall and his school, who accuse us of being irrational, incorrect, not sane, etc., would be a little surprised. It is a pity when correspondents think they know it all. This method will stand the test and needs no leading lights to praise it. All I say is that I have done both ways, and stuck for twenty years to the casting with ropes using the clam always, but now find it is easier to operate standing: not half so tired after hard day, better for the colt, and less trouble for the owner, occasionally, I have been compelled to cast.

As regards chloroform, we would never think of operations on, say, neurotomy, quittor, hernia without its use, and would include castration, even at the cost of having to resort to the ropes again, if the patient appeared to suffer as much as some would have us believe, but in nearly every case they appear quite comfortable, and not at all unhappy—at least in my case.

I have lost two cases only, and those from unperceived inguinal hernia, one in a two-year old, which I cast having first most carefully examined for hernia; he was allowed to rise, and had not gone twenty yards before the bowels reached his hocks. I detected the hernia in this colt when a yearling, and advised he be left over, and assured the owner he would be fit when two years old.

The other colt was a yearling, I operated standing and failed to find anything wrong and removed the clams on the following day also, and nothing appeared until about half-an-hour afterwards. Both these colts died; one was cast, the other was not, one was detected the year before, the other was not observed at all.

The Anæsthetic Bill has something good about it but there will be some difficulties to clear away.

Re docking and use of hot iron, I shall continue to use it as the best method in every way, but I think there should be an age limit, say not after one year old. Before removing the portion of tail I apply three pieces of soft thick band, two or three inches apart, very tight, and think it helps to relieve a little and make the operation cleaner.—Yours truly,

SAM CHAMBERS.

Dear Sir,

Would you allow me space to reply to Mr. Mayall I am afraid Mr. Mayall has been rather hasty in his judgment. First, please let me say that it was quite unreasonable of him to sarcastically scandalise one's school unnecessarily. A man's practical knowledge is gained outside the beloved walls. Mr. Mayall has evidently covered a large part of the country, having (as he quotes) been in Mold, Ipswich, Dover, and Norwich. Well, I can go a little better than that, and say that I have acted as pupil and assistant in most of the Southern Counties, Midlands, and all the Northern Counties; also many parts of Scotland. During this period I have seen and done the operation on hundreds of colts. Again I make the statement—"In the recumbent position, the animals in the majority of methods are clamped." Evidently Mr. Mayall has misread the phrase, or he is trying (to use Mr. Blackwell's expression) more "acrobatic surgery."

1. *Torsion.* Is a clamp not necessary, or will one just twist away at leisure and leave to luck the cord being severed in a suitable place?

2. *Hot Iron.* (Should the muscular portion of the cord be at first separated, as is usually done in the "torsion method.") What is to be done with the artery? Are we to pick the testicle up in the fingers and gently sear the artery until the wall is gone through, and then get a free sanguinary bath? (If the muscular portion of the cord is left intact, without a clamp it will indeed be an acrobatic feat). Will not the colt withdraw his testicle every time the cord is touched with the hot iron?

3. *Ecraseur.* Is not this instrument actually a clamp in itself when working?

I think if Mr. Mayall had left these methods out of his correspondence it would have been surmised that he had discovered tome new means for castration, however, perhaps he will honour us, at some time, with a description of the aforementioned methods, *without clamps*.—Yours faithfully,

FRANK CHRISTOPHER, CLASS C.

Lancaster, Sept. 14.

BOOKS RECEIVED.

TEXT BOOK OF MEAT HYGIENE, With special consideration of antemortem and postmortem inspection of food-producing animals, by Richard Edelmann, Ph.D. Royal State Veterinarian of Saxony, Professor at the Ryl. Vety. High School in Dresden. Authorized translation revised for America by John R. Mohler, A.M., V.M.D., Chief of Pathological Division, U S. Bureau of Animal Industry, and Adolph Eichorn, D.V.S., Senior Bacteriologist. Royal 8vo. cloth lettered, pp. vi. + 376, with 150 illustrations and 5 coloured plates, 21/- net. No advts. Printed in America, J. & A. Churchill, 7 Great Marlborough Street

PRESCRIBER'S FORMULARY AND INDEX OF PHARMACY, by Thomas Pugh Beddoes, M.B., B.C. Camb., F.R.C.S. Eng: Pocket size (4 × 3) pp. xii. + 132, on thin paper, in grained roan. Price 2/6. Balliere, Tindall and Cox, 8 Henrietta Street, W.C.